

the Examiner believes that clarification is needed despite this explanation, Applicant authorizes the Examiner by Examiner's amendment to insert -- formed -- before "of" and -- which was -- before "cast" in claim 1, line 3, provided that such amendment is understood to be made for sake of improved clarity and not for distinguishing over prior art.

Also in claim 1, line 4, the phrase "less than the thickness" has been found to be vague because the object having the referenced "thickness" is questioned. To the contrary, Applicant urges that the terminology could not be clearer. The claim expressly recites that "the cover layer has a substantially uniform thickness" (emphasis added). Applicant cannot comprehend how it is possible to interpret the quoted clause in the alternate manners suggested by the office action.

Claim 29 is objected to because the phrase "liquid capable of curing [to a solid]" (extended text of the claim added) is deemed different from the phrase "cured liquid" of claim 1. This is traversed for several reasons. Firstly, the Examiner is respectfully reminded that one may define his invention in any form of his choosing consistent with applicable rules. There is no requirement to use the exact same term in different claims. Secondly, although the words "cured liquid" and "liquid capable of curing to a solid" are literally different, Applicant avers that they convey the same meaning to one of ordinary skill in the art. Thirdly, claim 1 is drawn to an article of manufacture and claim 29 is for a product produced by a defined process. The terminology of claim 29 has been adapted to properly define the process and is not unreasonably different from that of claim 1. Fourthly, despite any literal difference between the cited phrases, considered independently, the phrase "liquid capable of curing to a solid" is not indefinite. Therefore, this objection is unfounded.

Claim 30 has been amended by adding punctuation to obviate the stated rejection. The change involves only obvious elements of form and no new matter has been added.

Claims 32 and 34 have been amended to correct an obvious grammatical error and to specify more clearly the position of the outer layer on the second face of the body layer. No new matter has been added. These rejections have thus been overcome.

Claim 35 is objected to because the phrase "is flexible" is allegedly not clear. This rejection is respectfully traversed as follows. It is well established that terms shall be given their plain and ordinary meaning unless specifically defined otherwise in an application. The term "flexible" is used in the ordinary sense, i.e., pliant, which is to say that it is not rigid. The office action asserts that degree of flexibility is an issue because some layers can be more flexible than others. However, the claim simply calls for "[t]he composite of claim 30 which is flexible." (emphasis added) The relative flexibility of individual layers is thus irrelevant because the claim states that the composite is flexible, which implies that all the layers are flexible. Applicant respectfully submits that one of ordinary skill in the art can readily distinguish a flexible composite from a rigid composite, and therefore, this rejection should be withdrawn.

Rejections Under 35 U.S.C. §103

Claims 1-10 and 29-35 stand rejected as being obvious over Goppel et al. 3,915,783. The Examiner asserts that Goppel et al. describes all the limitations called for by the claims except for stating "a uniform thickness". It is alleged that selecting a uniform thickness constitutes a mere change in size of a component, which being within the level of ordinary skill in the art, renders the claimed invention obvious. This rejection is respectfully traversed on the following grounds.

Goppel et al. describes an article of at least two layers laminated with a thermosetting resin. One layer is a fibrous reinforcing material. The other required layer is an open cell structure sheet. According to the method, the sheet is impregnated with resin, the reinforcing layer is applied to one

side of the impregnated sheet and the two layers are compressed so as to expel resin from the sheet into the reinforcing layer. The reinforcing layer is impregnated with resin through its thickness and then cured during compression. See col. 2, lines 13-28. The article of Goppel et al. has a fibrous layer uniformly impregnated with thermosetting resin and a dense, visually solid layer without voids of an open cell structure impregnated to at least 25% of its open space with a thermosetting resin and in which the fibrous layer is bound to the dense, solid layer by the thermosetting resin. See col. 2, lines 29-44.

Claim 1 of this invention calls for a composite of a body layer and a solid cover layer. The Examiner equates the thermosetting resin of Goppel et al. to the cover layer and likens the open cell sheet together with the reinforcing layer of Goppel et al. to the body layer. Putting aside the issue of "uniform thickness" temporarily, it is seen that the cover layer of resin extends throughout the reinforcing layer/open cell structure sheet laminate. This is because both the reinforcing layer and the sheet are saturated with resin. In contrast, the claim calls for the cover layer to be embedded into the body layer to a depth less than the thickness of the cover layer. Hence, in the claimed configuration there is an excess of the cured cover layer positioned above the body layer. As the Examiner construes the configuration of Goppel et al., the excess is not present. Consequently, regardless of whether it is obvious to make the cover layer thickness uniform, Goppel et al. does not teach the relative positions of the cover layer and body layer called for by the claim.

The Examiner recites that selection of a uniform thickness is within the level of ordinary skill in the art. It would presumably have been obvious to make the cover layer uniformly thick. However, at column 5, lines 28-31, Goppel et al. recites:

The compression of the foam sheet and fibrous layer may be applied selectively over their surface so that the combined thickness of the compressed sheet and layer is not uniform.

At column 3, lines 15-20, Goppel et al. teach that it is a distinct feature of the patented article that the thickness can be varied widely. As the Examiner construes Goppel et al., the cover layer is the same thickness as the body layer. Therefore, Goppel et al. teaches away from the concept that the cover layer should be of uniform thickness. This further shows that the claimed invention would not have been obvious in view of Goppel et al.

Claims 1-10 and 29-35 stand rejected under 35 U.S.C. 103(a) as being obvious over Chant 3,867,221. This rejection is respectfully traversed.

As in the previously discussed rejection, the Examiner asserts that Chant discloses all elements of the claims except "about the uniform thickness applied". It is further alleged that one of ordinary skill in the art would be motivated to employ thermosetting resin on the open cell structure, corresponding to the body layer because discovering the "optimum level" of thickness involves only routine skill in this art.

Chant involves a disclosure very similar to that of Goppel et al., discussed above. It describes a laminated article of two layers, namely, a fibrous reinforcing layer and an open cell structure sheet. The laminate is impregnated and held together by a thermosetting resin. A method of making the laminate is also disclosed. As in Goppel et al., after impregnating the sheet with resin, the reinforcing layer is applied on one side of the sheet and the combination is compressed to cause the resin to further impregnate the adjacent reinforcing layer throughout its thickness. The primary difference from Goppel et al. is that the resin in the reinforcing layer is cured while maintaining compression while the resin in the sheet is not fully cured. Then compression is reduced which allows the sheet to expand up to its original, uncompressed thickness before the residual uncured resin is cured.

It has been explained that the present invention calls for a composite having all of the following elements:

- a cover layer of a cured liquid,
- the cover layer has a defined thickness,
- a body layer having a roughly textured face
- the defined thickness of the cover layer is uniform over the expanse of the composite.
- the cover layer being embedded into the body layer to a depth that is less than the cover layer thickness. That is, there is excess cover layer above the body layer.

Chant does not disclose all of these elements. More specifically, it does not teach that the cover layer embeds into the body layer short of the full thickness of the cover layer. In contrast, at column 4, lines 58-60, Chant recites:

"The articles made according to this process differ from known articles in that the thermosetting resin impregnates the entire article."

Chant thus teaches that the resin extends throughout the reinforcing layer and the sheet. It does not teach or suggest that there should be excess resin above the body layer. Therefore, regardless of whether Chant discloses "a uniform thickness being applied", the reference does not disclose or suggest the invention as defined by the claim. This rejection should be withdrawn.

The Examiner dismisses the claim limitation that the cover layer be of uniform thickness as a mere discovery of "the optimum level of thickness". The reference teaches that the laminate after compression is reduced will have a thickness of from 1.2 to 100 percent of its original thickness. See col. 4, lines 37-57. However, nowhere does Chant so much as mention how the thickness of any layer or whole laminate might vary over the extent of the article.

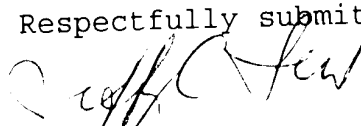
Uniformity or non-uniformity of the thickness is not a general condition disclosed in Chant as asserted by the Examiner. Accordingly, for the claim to call for the thickness of the cover layer to be uniform amounts to more than just selecting an optimum level because the condition to be optimized is not addressed by the reference. Applicant respectfully submits that the only mention of record about a uniform thickness of the cover

layer was made in Applicant's own disclosure. It is impermissible to base an obviousness rejection on hindsight and for this reason also, the rejection should be withdrawn.

All the claims have been summarily dismissed on the basis of two sweeping prior art rejections. Many of the limitations of the dependent claims have not been addressed. For example, claim 6 calls for a uniform thickness of the cover layer to be about 0.01 to 1 mm. Neither of the cited references teaches that the thickness of any component should be within this range. Claim 7 states that thickness of the cover layer should not have a variation exceeding 1 mm. This too, is not mentioned anywhere in the references. Similarly, claim 8 limits the penetration of the cover layer into the body layer to at most 95% of the cover layer thickness. Claim 30 is drawn to a composite limited to two elements, i.e., a glass fiber body layer and a cover layer of cured liquid. However, the cited references always refer to three elements, namely, thermosetting resin, reinforcing layer and open cell structure sheet. The Examiner has not identified how the cited references in combination with the general state of the art render these claims obvious. Applicant respectfully submits that the office action has not made out a prima facie case of obviousness against these claims.

As shown above, the pending claims would not have been obvious to one of ordinary skill in the art in light of the cited prior art references. Therefore, Applicant respectfully urges that the rejections be withdrawn. However, if the Examiner intends to withhold favorable action, Applicant requests the Examiner to telephone the undersigned for an interview to resolve any residual issues prior to issuing the next official action.

Respectfully submitted,



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Amended claims, substitute drawing sheets and replacement paragraphs and/or sections of the specification marked-up to show additions and deletions from previous versions are as follows:

30. (Amended) The composite of claim 1 which consists of (a) a body layer consisting essentially of glass fibers[,] defining a face of the body layer, and (b) a cover layer embedded into the face of the body layer, the cover layer consisting of a solid substance having a thickness, in which the thickness is substantially uniform and the cover layer penetrates into the body layer to a distance of less than the thickness of the cover layer.

32. (Amended) The composite of claim 31 in which the body comprises a second face opposite to the face embedded by the cover layer and which composite further comprises an outer layer on the second face [a face of the body layer opposite to the cover layer, the outer layer] comprising a material selected from the group consisting of metal foil, organic film, paper and a [mixture] combination thereof.

34. (Amended) The composite of claim 30 in which the body comprises a second face opposite to the face embedded by the cover layer and which composite further comprises an outer layer on the second face [a face of the body layer opposite to the cover layer, the outer layer] comprising a material selected from the group consisting of metal foil, organic film, paper and a [mixture] combination thereof.

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